



M+F | Components & Repair

COMPONENTS, REPAIR AND MAINTENANCE

Security and reliability for your systems and devices



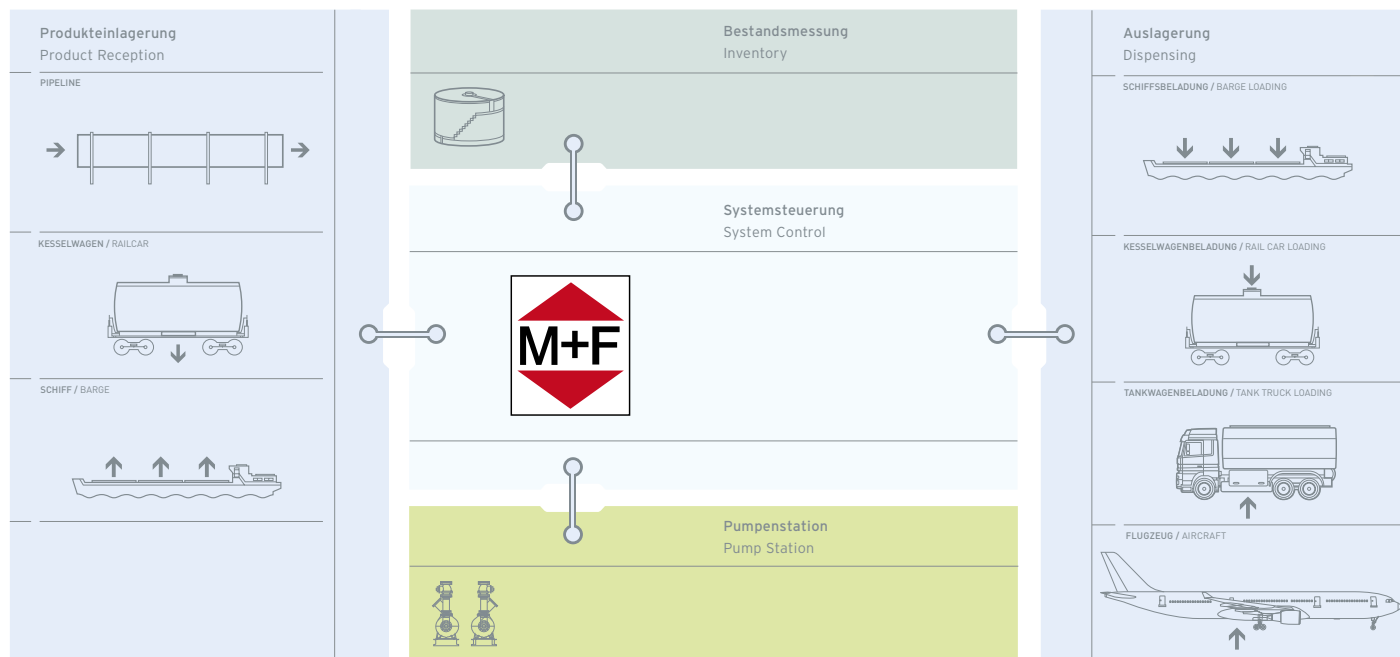
RELIABILITY AND SECURITY FROM A SINGLE SOURCE

Your innovative solution provider

As a solution provider, **M+F Technologies** provides you with its outstanding expertise in the handling of oil products. Our leading market position is underpinned by our long-standing know-how in loading processes in the oil industry and our continuous development work that benefits our customers around the world: We offer you complete system solutions based on our own technologies and state-of-the-art products, covering all your needs, from consulting and engineering to implementation and even including regular servicing.

As an experienced specialist, we take care of all tasks linked to the automation, digitalization, and management of tank farms, tank terminals and fuel supply systems. Our focus here is on loading systems for tank trucks, rail cars and ships, as well as on blending systems and fuel supply systems at airports.

- **Understanding of the industry:** proprietary products and pioneering technologies that reflect our profound know-how
- **Expertise:** tailored solutions reflecting the comprehensive understanding of the individual context
- **MID conformity:** measurement systems for all loading applications in the oil industry in accordance with the Measuring Instruments Directive



↑ Our services at a glance

BEST SELECTION OF COMPONENTS FOR YOUR NEEDS

Broad product range with expert advice

Our specialists select the components best suited to your specific application and needs from a manufacturer-independent range and deliver them to you in accordance with your requirements. We offer you a broad range of reputable manufacturers with state-of-the-art offerings. With the advice provided by our specialists, you will benefit from our in-depth knowledge of the industry and our many years of experience. **M+F Technologies** offers you everything from a single source - from the initial consultation through to installation.

Before installing new components, we naturally check the reparability of your existing components first. If, however, the repair and maintenance is no longer advisable from an economic perspective, we will select the optimal solution for you from our broad, manufacturer-independent range. Enjoy the investment security and reliable support offered by **M+F Technologies** over the entire life cycle of our products.

- **In-depth advisory expertise:** best possible selection of new devices for your needs
- **Long-standing experience:** practical hands-on advice
- **Security:** reputable manufacturers with state-of-the-art offerings
- **Everything from a single source:** from consultation to installation
- **Comprehensive know-how:** extensive range with a focus on the integrated solution

OUR AFTER-SALES SERVICES

Even after your purchase, the **M+F Specialty Refurbishment Facility**, as **authorised service partner**, will provide support not only for our own products, but also for the high-quality components made by the following manufacturers:

FMC Technologies

FH FAURE HERMAN

OCV Control Valves
Registered to ISO 9001
SERVICE PARTNER
www.controlvalves.com

KITO Armaturen GmbH

- **Sustainability:** extended life cycles for your components
- **Profitability:** cost-efficient and qualified maintenance
- **Specialised knowledge and quality:** authorised service partner offering first-class repairs



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OFFICIAL CAMERON REPRESENTATIVE

Premium manufacturer with an outstanding reputation



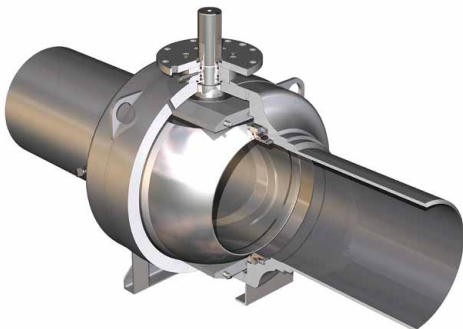
↑ **GENERAL VALVE TwinSeal/TruSeal Double Block-and-Bleed Plug Valve**
Applications: Tank Farms, Meter Stations, Loading/Unloading, Multi-Product Manifolds, Hydrant systems and Fuel loading



↑ **ORBIT Top Entry Double Block-and-Bleed Valve**
Applications: Mol sieve dehydration switches valves, Flowlines, Meter isolation, Dryer switching, Block and bypass, Product segregation, Emergency shutdown, Suction and discharge isolation, Heat transfer fluids/hot oil, Hydrogen service and many additional applications.



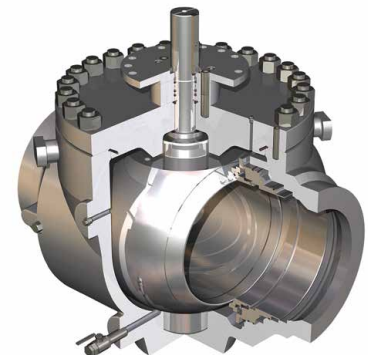
↑ **CAMERON Fully Welded Body Ball Valve Type 31**
Applications: Gas transmission, Products pipeline, Measurement skids, Dehydration systems, Gas separation systems, Natural gas storage, Dryer service, NGL plants, NGL pipeline, Compressor stations, CO2 services, Offshore and Subsea.



↑ **GROVE Fully Welded Body Ball Valve PMSS, M/M and Soft sealing Type B8**
Applications: Gas transmission, Gas separation systems, Compressor stations, Products pipeline, Natural gas storage, CO2 services, Measurements skids, Dryer Service, Offshore and Subsea applications, Dehydration systems, NGL plants and Pipelines



↑ **GROVE Split-Body Side-Entry Ball Valves PMSS, M/M and Soft sealing Type B4, B5, B7**
Applications: Transmission pipelines, Pumping, Compression and Re-injection units, Offshore platforms, Onshore terminals, Pig traps, Measuring stations, and Surge relief skids, Subsea installations and LNG plants.



↑ **GROVE Top Entry Ball Valves PMSS, M/M and Soft sealing Type BT1, BT2**
Applications: Pipelines, Pumping, Compression and Re-injection units, Offshore platforms, Onshore terminals, Pig traps, Measuring stations and Surge relief skids.



↑ ENTECH Non-Slam, Nozzle Check Valve
 Applications: Compressor discharge, Natural gas, Refineries, Pump discharge, Critical equipment discharge, Compressor/pump bypass, Storage facilities, Offshore and Nuclear power plants



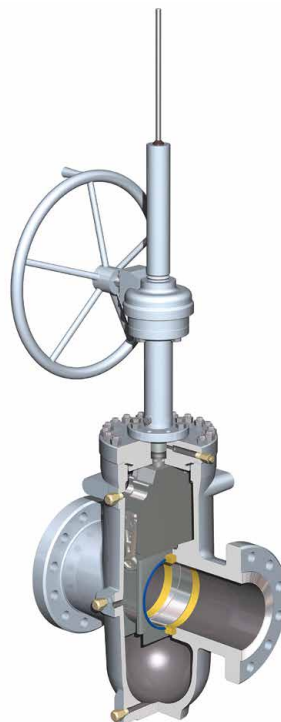
↑ TBV Valve
 Applications: Vent and bleed lines, Cryogenic services, Chlorine services Cold and LNG services



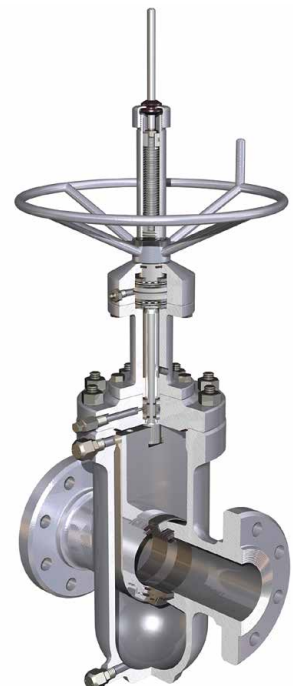
↑ RING-O Top Entry Ball Valve
 Applications: Subsea



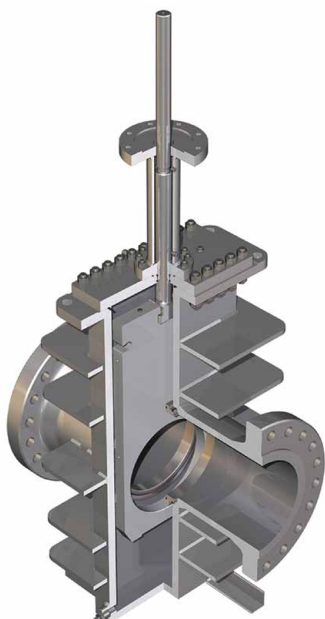
↑ RING-O Gate Valve
 Applications: Subsea



↑ WKM POW-R SEAL expanding Gate Valve
 Applications: Oil and Gas, Chemicals, Water, Slurry and Multiproduct applications



↑ WKM Saf-T-Seal Slab Gate Valve
 Applications: Mainline and Manifold valves in liquids pipelines, Storage wells (salt domes, etc.), Water flood, Safety valves (emergency shutdown valves (ESDVs), Pipelines and Wellheads



↑ GROVE Gate Valve Type G4N
 Applications: Oil and Gas, Pipeline main valves, Manifolds, Storage tanks, Pig launchers and receivers, Station valves and Distribution industry



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SUPPORT OVER THE ENTIRE LIFE CYCLE

Repairs on-site and in our Specialty Refurbishment Facility

M+F Technologies guarantees the excellent quality of the systems and components we supply. We apply the same quality standards to our repair and maintenance services. Our qualified, customer-focused employees offer you all of the support you need. We also utilise our strong infrastructure and are continually expanding our service offerings.

One of our major strengths is our high inventory level and the quick availability of components, devices and replacement parts. This eliminates the waiting times that can normally occur when orders are placed.

The maintenance and repair agreement offered by **M+F Technologies** guarantees the seamless and reliable functioning of your systems. We inform you in good time if your system needs upgrading, thus preventing damage and avoiding production downtime. Should your system suffer electromechanical faults, our specialist staff at **M+F** will ensure that any issue is quickly rectified, either at our Specialty Refurbishment Facility or directly at your site. In addition to rapid repair and recommissioning, precision and safety are our top priorities.

- **Investment security:** skilled repairs and availability of replacement parts over many years
- **Rapid recommissioning:** Specialty Refurbishment Facility and on-site service for component repairs
- **High inventory level:** quick availability of components and replacement parts
- **Manufacturer-independent range:** best selection for your individual applications
- **Comprehensive precision:** service engineers and specialist staff

OUR RANGE OF SERVICES

- Risk assessment of component condition, planning, project design
- Experts in your vicinity and personal consultation at your site
- Supply of new devices
- Inspection, maintenance and repairs on-site and in the production plant
- Best possible selection of components
- Repairs on-site and in our Specialty Refurbishment Facility
- Installation, commissioning and monitoring of the commissioning process
- Trained service engineers and specialist staff
- Replacement parts and service agreements [including maintenance plan]
- Calibration and pressure tests up to 650 bar
- Our own pressure and calibration test bench

HIGH AVAILABILITY AND SHORT DOWNTIMES

Repair, maintenance and testing from a single source

Our repair service offers you high availability and operational safety for your systems. One of our strengths is our high inventory level and the quick availability of components and replacement parts. Our specialist staff always ensure that any issue is quickly rectified, either at our Specialty Refurbishment Facility or directly at your site. In addition to rapid repair and recommissioning, precision and safety are our top priorities.

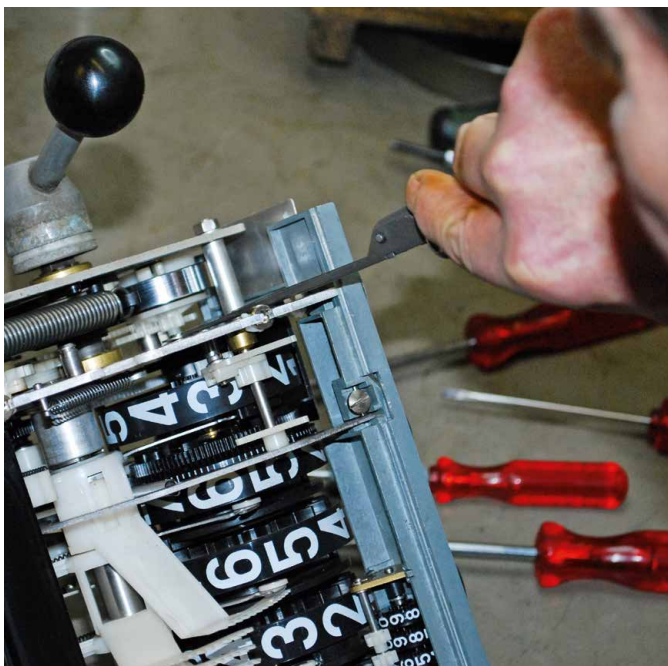
For the maintenance of liquid flow meters, instruments, valves, loading arms and other electromechanical components, you can make use of our entire range of services:

- Repair
- Testing
- Calibration
- Modernisation
- Upgrading/installation of new components

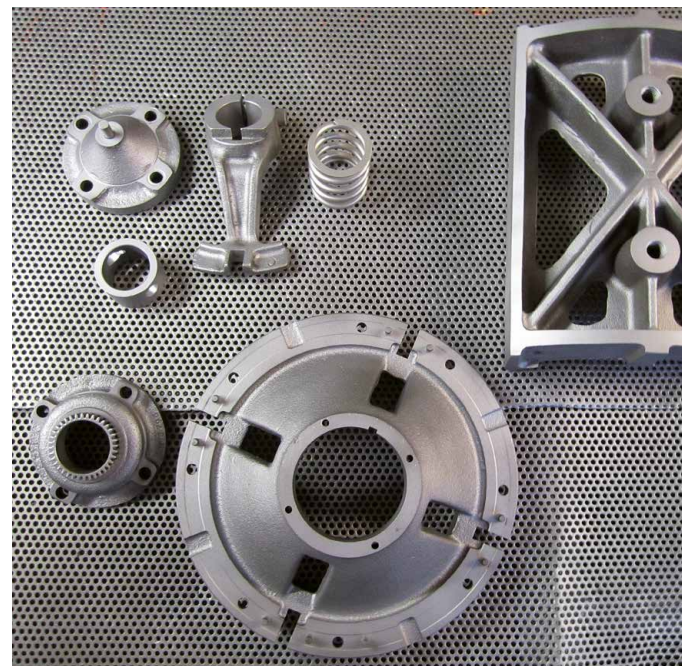
OUR SERVICES AT A GLANCE

- Disassembly and cleaning of the devices [disposal in accordance with §19 WHG]
- Sandblasting, glass bead blasting and/or painting
- Repair of counters, presets, electronic or mechanical printers, temperature compensation, pulse transmitters etc.
- Assessment and dimensional inspection of disassembled parts to determine level of repair
- Careful application of primer and paint in the colours specifically requested by the customer, exact calibration on our test benches if desired
- Function, leakage and pressure tests in accordance with the guidelines DIN EN 12266, API 6D, API 598, ANSI etc.
- Test records and documentation, weights and measurement preliminary testing in collaboration with the German Office of Weights and Measurement [preliminary test certificate], approval in accordance with the MID
- Repairs carried out using tested and certified components

↓ Specialist Refurbishment Facility



↓ Replacement parts





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MANUFACTURER-INDEPENDENT REPAIRS

Reliability for your systems and devices

FLOW METERS

M+F Technologies repairs the following devices, regardless of whom they were manufactured by:

- electromagnetic flow meters
- coriolis flow meters
- PD-meters
- turbine flow meters

- rotary piston flow meters
- oval gear meters
- vortex / swirl flow meters
- more



Before ↑ After

LOADING ARMS AND ON-SPOT LOADING ARMS

In addition to supplying the equipment, we also perform the following services:

- installation of special parts, such as special screws and special seals
- special parts in accordance with your specifications
- further services available upon request



Before ↑ After

CONTROL AND ROTARY PLUG VALVES

If your valves need to be repaired, we can guarantee you a high-precision repair up to a nominal diameter of DN 750/30" [larger upon request].

When carrying out the repair, the security of your valves is our top priority. This is why trained experts perform the testing with the highest possible level of technical precision. Should you encounter any faults in your system, our specialist staff will ensure that the issue is quickly rectified - we are happy to consider special requests. Rapid recommissioning is always the main objective.

Our approach consists of additional special process steps:

- sealing surfaces are refinished
- the seat and - if applicable - the ball are checked to ensure they are fully sealed
- housing pressure test using emulsified water - max. nominal pressure of 650 bar
- disassembly and installation of the system parts, ensuring they are returned to their original position
- alignment of the positioners and limit switches in accordance with the prescribed set points
- installation of special parts in accordance with your specifications



Before ↑ After

BUTTERFLY VALVES; BALL VALVES, PLUG VALVES, GATE VALVES AND DOUBLE BLOCK AND BLEED VALVES

In addition to supplying the equipment, we also perform the following services:

- sealing discs and plates, and sealing surfaces are checked and then reworked or replaced if required
- repair of the valve shut-off or of electrical / pneumatic switches
- disassembly and installation of the system parts, ensuring they are returned to their original position
- alignment of the positioners and limit switches in accordance with the prescribed set points
- installation of special parts in accordance with your specifications

↓ Repair of special valves





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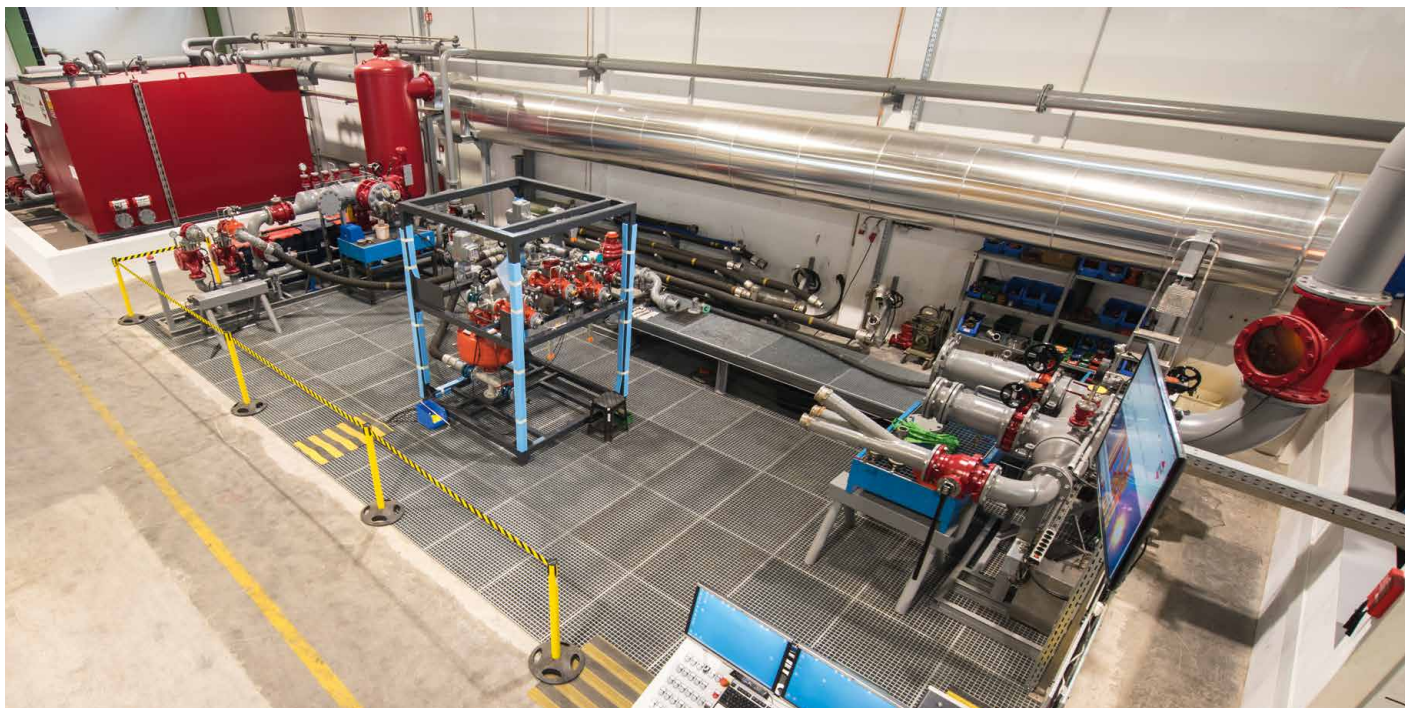
TESTING UNDER EXTREME OPERATING CONDITIONS

From testing to approval

CALIBRATION TEST BENCH

Our PTB-approved calibration test bench allows equipment to be inspected under a wide range of operating conditions.

- **Tank volume:** for the test medium 25,000 litres
- **Maximum test volume:** 20,000 litres
- **Test medium:** heating oil/diesel
- **Pump output:** up to 1,200 m³/h for a max. pump delivery head of 5 bar
- **Accuracy:** 0.02%
- **Hydrostatic testing of meters and metering skids:** up to 100 bar
- **Approval:** Office of Weights and Measures, MID



↑ Own calibration test bench

PRESSURE TEST BENCH

M+F Technologies' pressure test bench is able to exert up to 650 bar on standard 1" [DN25] to 30" [DN750] valves and carry out leakage tests in accordance with DIN EN 12266, API 6D, API 598 and ANSI etc.

It provides the following electrical outputs:

- 4-20 mA, 24/48/110/230/380/400
[V AC max. 30 ampere, V DC - max. 10 ampere]

It provides the following pneumatic output:

- 0-10 bar

Using this test bench, M+F is able to test entire systems or system components, including outside of the mechanical clamping area. The M+F pressure test bench contains an integrated digital counting device that uses a laser to detect water droplets. This device locates the tiniest of leakages and droplet formations during the integrity test and records them digitally.

We can also use this test bench to set, test and - in the presence of an independent expert - approve safety valves.

- **Check:** testing of systems, system components and safety valves, including under extreme operating conditions
- **Approval:** Office of Weights and Measures, MID, TÜV

	2" DN50	4" DN100	6" DN150	8" DN200	10" DN250	12" DN300	14" DN350	16" DN400	18" DN450	20" DN500	22" DN550	24" DN600	26" DN650	28" DN700	30" DN750
ANSI150 / PN20	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
ANSI300 / PN50	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
ANSI600 / PN100	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
ANSI800 / PN130	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
ANSI900 / PN150	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
ANSI1500 / PN250	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
ANSI2500 / PN420	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█



↑ Own pressure test bench



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